Notice of Allowability	Application No.	Applicant(s)	
	09/897,803	HARPER ET AL.	
	Examiner	Art Unit	
	Chongshan Chen	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment filed on 19 January 2005*.

2. ☒ The allowed claim(s) is/are *1,3-15 and 17-24*.

3. ☒ The drawings filed on *02 July 2001* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *4/5/05* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

JEAN M. CORRIELUS
PRIMARY EXAMINER

DETAILED ACTION

1. This action is responsive to Amendment filed on 19 January 2005.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michael E. Hudzinski on 05 April 2005.

The application has been amended as follows:

Please replace claims 1, 6, 7, 15 and 18 as follow:

Claim 1. A computer implemented method for administration and replication of a database, comprising:

providing a database management system with a built-in random sampling facility configured as an integral part of said database management system, whereby the random sampling facility has access to low level functions and buffers of the database management system;

executing said random sampling facility from within the database management to perform a replication operation on said database;

defining a database record sample size S wherein S is an integer value greater than one;

randomly sampling S records of the database using said random sampling facility;

storing statistics for each of said S records, wherein said statistics include a record key for each record; and,

producing an extrapolated replication partition analysis based on said statistics, wherein said replication operation is based on said extrapolated replication partition analysis.

Claim 6. A computer implemented method for database administration and replication, comprising:

providing a database management system with an integrated a random sampling facility as an integral part of the database management system, the random sampling facility having access to low level functions and buffers;

selecting a default sample size value S, wherein S is an integer value greater than one;

selectively receiving a desired sample size value D, wherein D is an integer value greater than zero, and setting said default sample size value S to said desired sample size value D when said desired sample size value D is received;

randomly sampling S records of the database using said random sampling facility;

storing statistics for each of said S records, wherein said statistics include a record key for each record;

producing at least one of an extrapolated replication partition analysis based on said statistics and a partial replication partition analysis based on said statistics; and,

performing a replication operation on said database.

Claim 7. A computer implemented method for database administration and replication, comprising:

providing a database management system with an integrated a random sampling facility as an integral part of the database management system, the random sampling facility having access to low level functions and buffers;

selecting a default sample size value S, wherein S is an integer value greater than one and represents a value of said selected default sample size;

selectively receiving a desired sample size value D, wherein D is an integer value greater than zero, and setting said default sample size value S to said desired sample size value D when said desired sample size value D is received;

randomly sampling S records of the database using said random sampling facility;

storing statistics for each of said S records, wherein said statistics include a record key for each record;

producing at least one of an extrapolated replication partition analysis based on said statistics and a partial replication partition analysis based on said statistics; and,

performing a replication operation on said database, wherein the selecting said default sample size value D further includes:

generating a table of S number pairs (Y_j,I_j), $j = 1, 2, \ldots, S$, wherein all Y and all I are initially set to zero;

initializing a reservoir of records to an empty state;

setting an index M to said reservoir and initializing the index M to zero;

generating a sequence of N non-repeating random numbers $U_1, U_2, \ldots, U_N$, $0<U<1$, wherein N is the number of records in the database; and,

performing additional steps for each random number U_k generated, k=1,2, . . .,N, the additional steps including:

skipping the next record in the database if U_k is less than the smallest value of Y in said table of S number pairs; and,

updating the table of S number pairs if a Y less than U_k exists by performing further steps including:

setting said index M equal to its current value plus one;

replacing the smallest Y in the table of S number pairs with U_k;

setting the I value paired with the smallest Y equal to M; and,

storing all or part of the next record of the database in said reservoir of stored records, wherein the current value of M is a reservoir index to said stored record.

Claim 15. A database management system (DBMS) for managing an associated database, the DBMS comprising:

random sampling facility configured as part of the database management system and having access to low level functions and buffers of the database management system;

first database analysis tools using said integrated random sampling facility for generating extrapolated reports on database content;

second database analysis tools using said integrated random sampling facility for generating extrapolated reports on database size;

database replication tools adapted to execute at least one of a complete replication having output partition sizes determined by extrapolating a random sample of said database, and a partial replication in which the data stored in the partial replication comprises a random sample of said database;

a pre-configured number S defining a default sample size, wherein S is an integer value greater than one;

a means for selectively receiving a particular number defining a desired sample size and setting said number S equal to said particular number;

a means for randomly sampling S records of the database using said random sampling facility;

a means for storing statistics for each of said S records, wherein said statistics include a record key for each record; and,

a means for producing at least one of:

an extrapolated database content analysis based on said statistics;

an extrapolated partition analysis based on said statistics; and,

a partial partition analysis based on said statistics.

Claim 18. A database management system (DBMS) for managing an associated database, the DBMS comprising:

random sampling facility configured as part of the database management system and having access to low level functions and buffers of the database management system;

first database analysis tools using said integrated random sampling facility for generating extrapolated reports on database content;

second database analysis tools using said integrated random sampling facility for generating extrapolated reports on database size;

database replication tools adapted to execute at least one of a complete replication having output partition sizes determined by extrapolating a random sample of said database, and a partial replication in which the data stored in the partial replication comprises a random sample of said database;

a pre-configured number S defining a default sample size, wherein S is an integer value greater than one;

a means for selectively receiving a particular number defining a desired sample size and setting said number S equal to said particular number;

a means for randomly sampling S records of the database using said random sampling facility;

a means for storing statistics for each of said S records, wherein said statistics include a record key for each record; and,

a means for producing at least one of:

an extrapolated database content analysis based on said statistics;

an extrapolated partition analysis based on said statistics; and,

a partial partition analysis based on said statistics, wherein said means for randomly sampling S records further comprises:

a means for generating a table of S number pairs (Y_j,I_j), j=1,2,...,S, wherein all Y and all I are initially zero;

a means for initializing a reservoir of records to an empty state;

a means for setting an index M to said reservoir and initializing the index M to zero;

a means for generating a sequence of N non-repeating random numbers $U_1, U_2, \ldots, U_N$, $0<U<1$, wherein N is the number of records in the database; and,

a means, for each random number U_k generated, k=1,2,...,N; comprising:

a means to skip the next record in said database if U_k is less than the smallest value of Y in said table of number pairs; and,

a means to update the table if a Y less than U_k exists, comprising:

a means to set said index M equal to its current value plus one;

a means to replace the smallest Y in the table with U_k;

a means to set the I value paired with the smallest Y equal to M; and,

a means to store all or part of the next record of said database in said reservoir of stored records, wherein the current value of M is a reservoir index to said stored record.

Allowable Subject Matter

3. Claims 1, 3-15 and 17-24 are allowed over prior art that made of record.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance:

The prior art of record alone or in combination does not fairly teach or suggest the combination of steps as recited in independent claim 1, wherein "providing a database management system with a built-in random sampling facility configured as an integral part of said database management system, whereby the random sampling facility has access to low level functions and buffers of the database management system; randomly sampling S records of the database using said random sampling facility; storing statistics for each of said S records, wherein said statistics include a record key for each record; and, producing an extrapolated replication partition analysis based on said statistics, wherein said replication operation is based on said extrapolated replication partition analysis".

The prior art of record alone or in combination does not fairly teach or suggest the combination of steps as recited in independent claims 6 and 7, wherein "providing a database management system with an integrated a random sampling facility as an integral part of the database management system, the random sampling facility having access to low level functions and buffers; randomly sampling S records of the database using said random sampling facility; storing statistics for each of said S records, wherein said statistics include a record key for each record; producing at least one of an extrapolated replication partition analysis based on said

statistics; and a partial replication partition analysis based on said statistics; and, performing a replication operation on said database".

The prior art of record alone or in combination does not fairly teach or suggest the combination of steps as recited in independent claims 15 and 18, wherein "random sampling facility configured as part of the database management system and having access to low level functions and buffers of the database management system; first database analysis tools using said integrated random sampling facility for generating extrapolated reports on database content; second database analysis tools using said integrated random sampling facility for generating extrapolated reports on database size; database replication tools adapted to execute at least one of a complete replication having output partition sizes determined by extrapolating a random sample of said database, and a partial replication in which the data stored in the partial replication comprises a random sample of said database; a pre-configured number S defining a default sample size, wherein S is an integer value greater than one; a means for selectively receiving a particular number defining a desired sample size and setting said number S equal to said particular number; a means for randomly sampling S records of the database using said random sampling facility; a means for storing statistics for each of said S records, wherein said statistics include a record key for each record; and, a means for producing at least one of: an extrapolated database content analysis based on said statistics; an extrapolated partition analysis based on said statistics; and, a partial partition analysis based on said statistics".

The dependent claims, bring definite, further limiting, and fully enabled by the specification are also allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chongshan Chen whose telephone number is (571)272-4031. The examiner can normally be reached on Monday - Friday (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Breene can be reached on (571)272-4107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chongshan Chen
April 5, 2005

JEAN M. CORRIELUS
PRIMARY EXAMINER